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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/774,461	02/10/2004	Farid Matta	10030542-1	9134

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Ian Hardcastle
AGILENT TECHNOLOGIES, INC.
Legal Department, D:429
P.O. Box 7599
Loveland, CO 80537-0599

EXAMINER	
STEIN, JAMES D	

ART UNIT	PAPER NUMBER
2874	

DATE MAILED: 09/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/774,461	MATTA ET AL.	
	Examiner	Art Unit	
	James D. Stein	2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 July 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6 and 8-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) 9+11 is/are allowed.

6)☒ Claim(s) *1-6,8,10 and 12-24* is/are rejected.

7)☒ Claim(s) ~~9 and 11~~ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This Office Action is responsive to the amendment filed on 7/15/05, which has been fully considered and entered. Claim 7 is cancelled and claims 1, 6, 9-11, 13-14, 16, 20-22 and 24 are amended. Claims 1-6 and 8-24 are pending in the application.

Response to Arguments

Applicant's arguments with respect to claims 1-24 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-5 6, 8, 10, 12, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over [USPUB 2002/0071638] to Musk.

With regard to claims 1, 6, 8 and 20, referencing fig 3 of Musk show an optical module 200 comprising:

an active optical component 40 (laser diode);

an optical fiber 30 arranged with respect to the active optical component 50 to be capable of propagating light 55 along an optical path between the active optical component 40 and the optical fiber 30 [0033];

a beam shaping optical component 212 (ball lens) located in the optical path 55 between the optical fiber 30 and the active optical component 40; and

a positioning stage device 22 for moving the optical fiber 30 with respect to the active optical device 40 (see entire document, [0031]);

a frame 20 to which the optical fiber 30 and active optical component 40 (via pad 60) are affixed.

Furthermore, Musk suggests that the positioning device 22 should be a MEMS (micro-electrical mechanical [0005, 0006, 0032]) device, or micro-machined movable device, as claimed by applicant. It is noted to applicant that frame 20 is taught by Musk to be a substrate. However, since substrate 20 is supporting the essential components of the device, which is the general purpose of a frame in any application, it is considered by the examiner to be a frame, as broadly recited in the claim.

Additionally, Musk teaches the alignment between the fiber 30 and the active optical device 40 is optimized (maximized) [0042, 0047, 0048, 0058], and holding one of the elements with respect to the other after aligning [0036].

Therefore, Musk discloses the claimed invention except for the positioning stage device 22 to be positioned between the frame 20 and the active optical component 40 (i.e. the active optical device mounted on the positioning stage device so that it is movable relative to the fiber 30). Instead, Musk shows the active optical component to be affixed to the frame 20. However, Musk suggests that the positioning device may instead be used to align various other optical devices including a laser chip [0029], which is an active optical device. Therefore, it would have been obvious at the time of the invention to one of ordinary skill in the art to modify the optical

module taught by Musk such that the active optical device 40 was affixed on the positioning stage device 20 while the optical fiber 30 was affixed in order to control the alignment of the optical path 55 emitted from the active optical device. Furthermore, the method of making an optical module of claim 20 is inherent to this disclosure.

With regard to claims 2 and 3, in addition to the rejection of claim 1 previously discussed above, Musk teaches active optical element 40 to be a laser chip (see entire document, [0030]). Furthermore, figs. 1-3 and 4-5 show the laser chip 40 emitting a beam from an edge. Therefore, the examiner believes the device to be an edge-emitting laser, as claimed by applicant.

With regard to claim 4, in addition to the rejection of claim 1 previously discussed above, the figures show alternate embodiments of the invention wherein the active optical component to is a photodiode 50 (also known in the art as a photo-detector).

With regard to claims 5, in addition to claim 1, Musk teaches the beam shaping optical device 212 to be a ball lens (see entire document, [0039]).

With regard to claim 10, fig. 6 shows a active optical component 540 affixed to the frame 524 (via pad 60), a first micro-machined movable stage 521 A affixed between the optical fiber 30 and the frame 524 and second micro-machined movable stage 521B affixed between the beam shaping component 212 and the frame 524.

With regard to claim 12, in addition to the rejection of claim 1 previously discussed above, Musk teaches a locking means for holding the positioning device 22 in position after the optical component is aligned [0050].

Claim 14-17, 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Musk as applied to claim 12 above, and further in view of [USPUB 20040052468] to Pham et al.

("Pham"). The claimed invention has been disclosed and previously discussed above except for the module to further comprise a micro-heater that melts solder in order to hold the positioning device 22 in position. Pham discloses a related optical alignment module comprising a micro heater 112 that melts solder to lock the optical device in alignment [0010], which would hold the optical elements in alignment in a more permanent and robust manner than taught by Musk. Therefore, it would have been obvious at the time of the invention to modify the device as disclosed by Musk to include a micro-heater and solder in order to hold the optical elements in alignment in a more permanent and robust manner than that taught by Musk. With regard to claims 16 and 17, it is noted to applicant that solder as taught by Pham, is a type of adhesive. Furthermore, the methods of making an optical module of claims 21 and 22 are inherent to this disclosure.

Claims 18 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Musk-Pham as applied to claim 16 above, and further in view of [USPAT 6,086,776] to Maynard, which discloses another related optical alignment device. Musk-Pham disclose the claimed invention except for the adhesive to be activated by exposure to UV radiation or RF radiation. In addition UV-curable or activated adhesives to be to be extremely well-known as an alternative to soldering, Maynard teaches that the optical element may be secured in proper alignment by a UV-curable adhesive *instead of solder* (col. 9 line 34). Therefore, it would have been obvious at the time of the invention to modify the device as taught disclosed above to include a UV-activated adhesive, in order to secure the optical element in proper alignment when the extreme temperatures required by soldering would cause damage to the device. Furthermore, the methods of making an optical module of claims 22 and 23 are inherent to this disclosure.

Claims 13, 19 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Musk as applied to claims 12 and 20, and Musk-Pham as a applied to claim 16 and 20 previously discussed above, and further in view of [USPAT 6,748,141] to Kennedy et al. ("Kennedy"), which discloses a related optical alignment module. Kennedy teaches that a computer 6, which inherently has memory and circuits, can be used to maintain the positioning of the fiber end 11 upon reaching optimal alignment (figs. 3A and B, col. 4 lines 57-65, col. 6 lines 17-29). Kennedy teaches this configuration facilitates the ability to accurately align optical devices quickly (col. 2 line 23). Therefore, it would have been obvious at the time of the invention to modify the device taught by Musk-Pham to include a position memory circuit to control the positioning device and hold said positioning device in position when optimal alignment is obtained in order to automate the alignment process and achieve alignment more quickly.

Allowable Subject Matter

Claims 9 and 11 are allowed. None of the cited prior art discloses or suggests both a first and second micro-machined movable stage respectively affixed between:

1) the frame and active optical component, and the frame and the beam-shaping optical component;

2) the frame and active optical component, and the frame and the optical fiber.

Such configurations would provide for additional optical alignment capability. One of ordinary skill in the art would not have found it obvious to or have been motivated to modify the device taught by Musk in order to achieve such configurations.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James D. Stein whose telephone number is (571) 272-2132. The examiner can normally be reached on M-F (8:00am-4:30pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James D. Stein
Patent Examiner, AU 2874

John D. Lee
Primary Examiner